

PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT (PCT Article 36 and Rule 70)

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|------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|
| Applicant's or agent's file reference | FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416) | |
| International application No. PCT/GB 03/02861 | International filing date (<i>day/month/year</i>) 03.07.2003 | Priority date (<i>day/month/year</i>) 11.07.2002 |
| International Patent Classification (IPC) or both national classification and IPC C08F10/00 | | |
| Applicant BP CHEMICALS LIMITED | | |

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

I ☒ Basis of the opinion

II ☐ Priority

III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

IV ☐ Lack of unity of invention

V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

VI ☐ Certain documents cited

VII ☐ Certain defects in the international application

VIII ☐ Certain observations on the international application

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|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|
| Date of submission of the demand 06.02.2004 | Date of completion of this report 25.08.2004 |
| Name and mailing address of the international preliminary examining authority: <div style="display: flex; align-items: center;"> <div> European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016 </div> </div> | Authorized Officer Kaumann, E Telephone No. +31 70 340-3640 |



**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/GB 03/02861

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17):*

Description, Pages

1-7 as originally filed

Claims, Numbers

1-12 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/GB 03/02861**

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

1. Statement

| | | |
|-------------------------------|-------------|------|
| Novelty (N) | Yes: Claims | |
| | No: Claims | 1-12 |
| Inventive step (IS) | Yes: Claims | |
| | No: Claims | 1-12 |
| Industrial applicability (IA) | Yes: Claims | 1-12 |
| | No: Claims | |

2. Citations and explanations

see separate sheet

Re Item V

Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Subject-matter

Subject-matter of the present application is a gas phase polymerization process, characterized in that it comprises a pre start up step, wherein the reactor is subjected to a cleaning treatment using an alkane, being circulated across the reactor under reduced pressure and elevated temperature.

2. Prior Art

Reference is made to the following documents:

D1: EP 0 180 420
D2: EP 0 853 091
D3: US 5,026,502
D4: JP(A) 4-063290
D5: US 6,162,779
D6: US 3,477,513

3. Article 33(2) PCT (Novelty)

The present application does not satisfy the criterion set forth in Article 33(2) PCT because the subject-matter of **claims 1 - 12** lacks novelty in respect of prior art as defined in the regulations (Rule 64(1)-(3) PCT).

D1 (cited in the application) relates to a process for the gas phase polymerisation of ethylene or propylene by bringing the said ethylene or propylene into contact with a catalytic system of the Ziegler-Natta type under polymerisation conditions in a reactor in which the polymer or the copolymer is maintained in a fluidised bed and/or is agitated with mechanical stirring, said reactor containing a charge powder. The process comprising a start up operation with the charge power.

Subject-matter of the present application is such a gas phase polymerization process (according to D1), comprising a pre start up step, wherein the reactor is subjected to a cleaning treatment using an alkane.

Therefore, the subject-matter of claims 1 - 12 lacks novelty regarding **D1**.

D2 discloses a process for the polymerisation of olefins in a gas phase reactor, said process being carried out in the presence of a catalyst system comprising (a) a

metallocene compound and (b) an activator **and a lower alkane**, which is added directly to the gas phase reactor, prior to the addition of the catalyst, see examples). Therefore, the subject-matter of claims 1 - 12 lacks novelty regarding **D2**.

4. Article 33(3) PCT (Inventive Step)

The present application does not satisfy the criterion set forth in Article 33(3) PCT because the subject-matter of **claims 1 - 12** lacks an inventive step in respect of the prior art as defined in the regulations (Rule 64(1)-(3) PCT).

D1, which describes a gas phase polymerization process, is considered to represent the closest prior art.

The only difference between the subject-matter of D1 and the subject-matter of the present application is, that no previous cleaning step is disclosed in D1.

There is no evidence on file for any technical effect resulting from this technical feature only. However, it can be assumed, that conducting a chemical reaction using a clean equipment is advantageous compared to a reaction in an equipment, which is not clean.

Therefore, the objective technical problem of the subject-matter of the present application was, to provide a polymerization process in a clean equipment.

D3 to D6 disclose the use of alkanes as cleaning agents in cleaning compositions.

Therefore, it appears obvious to the skilled person, faced with the above mentioned problem, to use alkanes for the cleaning of the polymerization reactor in order to achieve certain advantages.

Since it appears obvious that conducting a chemical reaction using a clean equipment is advantageous compared to a reaction in an equipment, which is not clean, no invention can be recognized and an inventive step can not be acknowledged to the subject-matter of the present application.

5. Article 33(4) PCT (Industrial Applicability)

Since is the gas phase polymerization of olefins is an important industrial process, industrial applicability can be acknowledged.